



Company Description

Dynamic Engineering products are designed and manufactured in the USA. The majority of assembly work is done in our state-of-the-art manufacturing facility in California. Since 1988 we have developed engineering, purchasing, assembly, and test capabilities to guarantee reliability in our products. This is evidenced by our AS9100 and ISO9001 certifications. Dynamic Engineering has a wide product line with embedded solutions for PCIe, PCI, PMC, XMC, IndustryPack, cPCI, cPCIe, PCI-104, PC104e, VME and VPX. We also work with custom requirements. Solutions include adapters/carriers to install one embedded format [e.g. PMC] into another [e.g. PCIe], utilizing available positions in current systems with existing or upgraded hardware. Other solutions include standard bus interfaces including: UART, NRZ, HDLC, ASCB, SpaceWire, 1553, and HOTLink. Custom designs are frequently implemented for special purpose buses and interfaces. Additionally, Dynamic Engineering provides chassis, power supplies, backplanes, breakouts, cables and other support functions to complete each solution. Drivers, reference SW and applications are supported for Windows, and Linux. For information on specific products please visit our website <https://www.dyneng.com>.

Dynamic Engineering provides complete solutions. We can provide the chassis, board, adapter, cable, software and support you require. We can make a custom cable to match our HW with your requirement or a custom driver to work with your particular version of an OS. Please contact us to for your complete solution. sales@dyneng.com

When visiting the Dynamic Engineering website, you can navigate using the search function, links from your search engine or directly with the menu system. The menu system is the most direct and flexible approach. Hover over the “Products : Form Factor” or “Products : Type” at the top of any page. Use the resulting dropdown menu system to search based on the slot you are working with or the type of solution you are looking for. For example, under the Format menu if you need a PCIe solution to adapt an XMC – pick PCIe solutions and then the XMC submenu to see the options. Under the Type heading you can navigate to XMC carriers and see the various form factor options.



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Off-The-Shelf Solutions

Dynamic Engineering operates in the embedded industrial interface market with chassis, power supplies, IO, special functions, adapters, test apparatus, cables, break-outs, and software. When thinking of a solution first think of the shape... Dynamic Engineering products are usually named with the format of the card as the start of the name. For example, PCI-SpaceWire is the PCI version of the SpaceWire card. Similarly, PCIeBPMCX1 is a PCIe card which adapts a PMC into a PCIe slot. B = Bridge, SW = Switch, L = lanes etc. in the descriptions.

IndustryPack

IP Modules have been around for a long time. Dynamic Engineering was a key contributor to GreenSpring Computers in the late 80's and into the middle 90's with multiple designs, and participated in writing the specification which later became a VITA standard. IndustryPack modules are still popular due to their small size, inherent ruggedness and lower cost per function.

Dynamic Engineering has multiple IP Modules in production as well as adapters/carriers.

Current Carrier / adapter solutions for IndustryPack

Name:	Description
PCIe3IP	½ length PCIe device with 3 IP positions
PCIe5IP	Full length PCIe device with 5 IP positions
PCI3IP	½ length PCI device with 3 IP positions
PCI5IP	Full length PCI device with 5 IP positions
cPCI2IP	3U 4HP cPCI device with 2 IP positions, Bezel or Rear IO
cPCI4IP	6U 4HP cPCI device with 4 IP positions, Bezel or Rear IO
PC104pIP	PCI-104 device with 1 IP position
PC104p4IP	non-std PCI-104 device with 4 IP positions
VPX2IP	3U 4HP VPX device with 2 IP positions. Bezel or Rear IO



Current IP Modules

Name:

Description:

[IP-1553](#)

1 or 2 dual redundant 1553 ports

[IP-429](#)

Up to 4 Tx and 8 Rx ARINC 429 ports

[IP-CAN](#)

1 or 2 CAN ports with direct or isolated IO

[IP-BiSerial-VI](#)

Spartan 6 with 24 differential IO. Customizable. Multiple customized versions available. GPIO model available.

[IP-BiSerial-VI-USER](#)

Reference design and SW package to support User design.

[IP-Relay-16](#)

16 Form C Relays. 1.5A, 220/250 VDC/VAC

[IP-OptoISO-16](#)

16 optically isolated FETs. 60V, 1.5A High or Low side

[IP-ReflectiveMemory](#)

Up to 256 nodes, 512Kbytes per node shared memory

[IP-Parallel-IO](#)

Options for TTL, 485, LVDS and mixed IO types. Multiple customized versions available.

[IP-Pulse](#)

TTL and/or LVDS/485 IO with programmable pulse generators. Time off, Time on, Shift, number of pulses.

[IP-Parallel-HV](#)

24 Input and 24 Output with high voltage IO capability

[IP-QuadUART](#)

4 UART ports with programmable RS232 and RS485 IO per port. [232 TX, RX, RTS, CTS, DSR, DTR, RI, CD]
[485 RX, TX, RTS, CTS]

[IP-QuadUART-485](#)

4 UART ports with 485 IO, full and half duplex, flow control signals. [TX, RX, RTS, CTS, DSR, DTR]



Current IP Accessories and Debug Aides

Name:	Description:
IP-Debug-IO	Connects directly to IO connector and breaks out to header and test points. Used with IP-Debug-Bus
IP-Debug-Bus	Install between carrier and IP for access to all IP Bus signals – Data, Address, Control, Interrupts etc. Hot Swap interface with power switch to save rebooting computer when switching modules or connections. Very useful for debugging new SW and to test IP modules.
HDRterm50	50 conductor ribbon cable to screw terminal interface with DIN Rail mounting.
HDRribn50	Custom length 50 conductor ribbon cable to match IP carriers with HDR style connectors and HDRterm50.
VHDCIterm68	VHDCI to screw terminal adapter with DIN rail mounting. Supports IP carriers with VHDCI IO.
IP-Connector-Saver	Use to mount IP module approximately .534” above the standard plane for improve cooling, to avoid tall components and to protect the connectors if installing/uninstalling frequently. Can be mounted to carrier or module side. Includes standard mounting HW.
1553-Ribbon-Triax	Convert from Ribbon Cable [50 conductor] to 1553 triax interface consistent with IP-1553. Both ports supported [-1, -2 models]. DIN rail mounting option. Mounting holes provided to attach to chassis.
IP Mounting HW	Standoffs and screws to mount IP module to carrier. Please note: Dynamic Engineering modules include the HW. Some vendors do not include the HW and sometimes it is misplaced. Recommended to mount modules to carriers for vibration hardening.



PMC & XMC

PCI Mezzanine Card [PMC] and XMC [PCIe variant of PMC] are second generation embedded modules. The innovative IP module was enhanced by incorporating a PC standard bus interface [PCI] and providing a larger surface area allowing for higher integration level products. Later XMC devices kept the PMC mechanical and incorporated the current PC bus [PCIe]. Dynamic Engineering has been a supplier of PMC's and XMC's since their introduction.

Current Carrier / adapter solutions for PMC & XMC

Name:	Description
PCIeBPMCX1	Mount PMC module in PCIe system. 32/64, 25,33,50,66,100,133 MHz PMC bus operation. 4 lane PCIe connector, ½ length PCIe card, industrial temp components, transparent bridge, local power supplies [3.3, 5, +/- 12V], bezel and rear IO support. Zero slot fan options. Matched length, impedance controlled, PCI, PCIe and IO routing. Power supplies updated to 15A [3.3 & 5]. Initial release in 2007. Now on rev 13.
PCIeBPMC	Single lane version of PCIeBPMCX1.
PCIeBPMCX2	Install 2 PMCs in one PCIe position. Full length PCIe device. PCI/PCI-X operation. Industrial Temperature components, transparent bridge, bezel and rear IO support for both PMC positions. Zero slot fan options. Matched length, impedance controlled, PCI, PCIe and IO routing.
PCIe8LXMCX1	Mount XMC module in PCIe system. Passive 8 Lane PCIe routing. Local power supplies, Industrial Temp components, programmable VPWR [5,12], bezel and rear IO support. Zero slot fan options. Matched length, impedance controlled PCIe and IO routing. 15A main supplies.
PCIe4LXMCX1	4 lane version of PCIe8LXMCX1.
PCIe8LXMCX2	Switch based XMC carrier with two XMC positions on a full length PCIe card. 8x8 switch operation. Gen1-3. Industrial Temp components. Matched length, impedance controlled PCIe and IO routing. Option for internal connector bus [CB] – interconnection between the XMCs. Customizable versions for client specific IO requirements both in connections and connectors.

PCIe16LXMCX2	Switch based XMC carrier with two XMC positions on a full length PCIe card. 16x8x8 switch operation. Gen1-3. Industrial Temp components. Matched length, impedance controlled PCIe and IO routing. Local 15A power supplies for 5, 3.3V. Selection for VPWR.
PCI2PMC	Passive ½ length PCI format carrier for PMC. Bezel and Rear IO support.
PCIBPMC	Bridge based PMC carrier in ½ length PCI format. Bezel and Rear IO support. Zero Slot fan options.
PCIBPMCX2	Bridge based dual PMC carrier, full length PCI device. Bezel and rear IO both positions. Zero Slot fan options.
PMC-UNIV-TEST	Mini vertical passive carrier to mount PMC in PCI slot. JTAG and rear IO support. PCI signals have test points. Option for pass through model to use between PMC and carrier to access PCI bus.
XMC-UNIV-TEST	Mini vertical passive adapter to mount an XMC in a PCIe slot. JTAG and rear IO support.
PMC-MC-X2-RIO	PMC Mini Carrier X2 has two PMC positions mounted top and bottom in a compact arrangement. Power supplies [15A for 5,3.3] +/-12V wide range power input with reverse power protection. Local motherboard features for reset, clocks, request/grant, interrupt routing, fan control, etc. Rear IO supported with matched length, impedance controlled, routing to VHDCI connectors. Matching chassis available.
PMC-MC-X4-RIO	PMC Mini Carrier X4 has four PMC positions mounted 2 top and 2 bottom in a compact arrangement. Power supplies [15A for 5,3.3] +/-12V wide range power input with reverse power protection. Local motherboard features for reset, clocks, request/grant, interrupt routing, fan control, etc. Rear IO supported with matched length, impedance controlled, routing to VHDCI connectors. Matching chassis available. Option for power output. Many PMC devices do not use all of the power available. Screw terminal style header available to provide 5,3.3, 12, -12, GND levels to a separate device. Self-healing fuse protected.
cPCI2PMC	3U 4HP passive single position carrier to adapt PMC to cPCI. Options for rear IO, 64 bit PCI bus, Slot Zero operation, zero slot fans. Bezel IO.



[cPCIBPMC3U32](#)

3U 4HP bridged single position carrier to adapt PMC to cPCI. 32 bit PCI interface. 33/66. Industrial temperature components. Option for rear IO [J2] and zero slot fans

[cPCIBPMC6U](#)

6U 4HP cPCI device with two PMC positions. Current version supports 32 bit PCI bus with 33/66 operation. Options for rear IO [J3, J5], zero slot fans.

[cPCIBXMC3U32](#)

3U 4HP adapter for XMC into cPCI. Reverse bridge with 32 bit 33/66 PCI interface. Single lane PCIe interface to XMC. Local power supplies for XMC with selection for VPWR. Option for Rear IO, zero slot fan. Contact Dynamic Engineering for a 4 lane version [upgrade to a different bridge].

[PC104p2PMC](#)

Non-standard PC104p device with passive PMC connection. Rear supported via SCSI connector. Full mounting of PMC supported.

[VPX8LXMC3U](#)

VPX 3U 4HP adapter for XMC modules. 8 lanes routed from VPX to XMC connector. Power supplies to support all VPX rails and programmable VPWR. Options for air cooling and conduction cooling with added thermal frame and wedge locks. Bezel and Rear IO options depending on configuration. SSC and NSSC operation. Industrial Temperature components. Conformal coating option.



Current PMC / XMC Modules

Name:	Description:
<u>PMC-BiSerial-VI</u>	PMC module with Spartan 6, 34 differential IO, independent termination & direction controls, matched length, controlled impedance routing, PLL, industrial temperature components, options for bezel and or Pn4 [rear] IO, LVDS/RS485, 128Mx16 DDR. Platform for multiple designs including custom versions [more than 30 on this series]. UART, telemetry, Manchester, Miller, NRZ, and many other parallel and serial interface types developed.
<u>ccPMC-BiSerial-VI</u>	Conduction cooled PMC module with Spartan 6, 34 differential IO, independent termination & direction controls, matched length, controlled impedance routing, PLL, DDR, industrial temperature components, Pn4 [rear] IO, options for LVDS/RS485. Designs from other BiSerial platforms can be ported to this model. Initial design incorporated SDLC, NRZL, and parallel ports.
<u>PMC-BiSerial-6T20</u>	PMC module with BiSerial Architecture and addition of 20 Transformers. More options for terminations with resistive and capacitive. Industrial temperature components, PLL, FIFO, Bezel IO.
<u>PMC-Parallel-TTL</u>	PMC module with TTL interface. Programmable to 5V or 3.3V reference for IO. 64 bidirectional independent IO. Base model is -GPIO with Change of State, programmable sense, frequency, PLL, Bezel and or rear IO, industrial temperature components. Spartan 6 suitable for custom applications. GPIO model available.
<u>XMC-Parallel-TTL</u>	XMC module with 64 independent TTL bits. Programmable IO to 5V or 3.3V reference. 64 bidirectional independent IO. Base model is -GPIO with Change of State, programmable sense, frequency, PLL, Bezel and or rear IO, industrial temperature components. Spartan 6 suitable for custom applications. GPIO model available.
<u>PMC-Parallel-IO</u>	PMC module with 64 TTL IO. PLX PCI interface, CPLD with 12 IO and programable options for interrupts etc. Industrial Temperature components.
<u>PMC-Parallel-485</u>	PMC with 34 differential IO RS485 / LVDS options. Bezel or Rear IO. Spartan II FPGA. Register based IO applications not requiring BiSerial level hardware.



[ccPMC-HOTLink](#)

Conduction Cooled PMC with 6 HOTLink ports. PECL implementation. Spartan 6 with DMA. Option for transformer coupling. 12 Differential IO for secondary bus support.

[PMC-SpaceWire-BK](#)

PMC with 4 SpaceWire ports. Industrial Temperature components. 3 models. 200 MHz operation, standard MDM connectors [3] at the bezel + 1 at Pn4 or all 4 ports available at the rear IO connector. PLL with separate references for each port. Independent DMA for each of the 8 ports [Rx and Tx separately]. Initial design from 2004 for Lockheed / NASA. Now with DDR for enhanced memory.

[PMC-OctalUART-232](#)

PMC with 8 UART ports, RS232 IO, Pn4 or bezel IO, Industrial Temperature components, multiple clock references for full standard baud rate options. Replacement for PMC-OCTPRO-232 – same pinout and register map. Just change the vendor, Device ID fields.

[ccXMC-Serial](#)

Conduction cooled XMC module with Spartan 6, 16 differential IO, independent termination & direction controls, matched length, controlled impedance routing, 12 RS-232 IO, PLL, temperature sensor, industrial temperature components, Pn6 [rear] IO, LVDS/RS485 for differential IO, 128Mx16 DDR. Initial design incorporates 2 ports of HDLC, 2 ports of NRZ, and 3 UART ports with RTS&CTS.



Current PMC / XMC Accessories and Debug Aides

Name:	Description:
PMC2mPCI	PMC module to convert to mPCI. Type III. Passive design, just install and use. mPCI on rear of PMC. Blank PMC bezel.
PMC2PCI	PMC module to install PCI devices. 2 64 bit PCI connectors – 3.3 and 5V keying provided [use 1]. Standard PMC mounting. Use a riser to turn the PCI device to be parallel to rear of PMC2PCI for use in system.
SCSI Cable	SCSI cable mates with a variety of PMC / XMC modules and carriers. Available with latch block or thumb screw interface. Multiple length options.
HDEterm68	Break out, plant interface, screw terminal to SCSI connector adapter. 2 cross connected SCSI connectors to allow the signals to flow through the device and available to break out. Routed with controlled impedance, matched length traces. Options for engineering model with termination options. Vertical or horizontal connectors, test points instead of screw terminals or both, DIN rail mounting system or stand-off mounting. Other versions for 50 & 64 ribbon, SCSI 100, VHDCI.
VHDCIterm68	Single VHDCI connector interconnected to Test points and screw terminals. Routed with impedance controlled, matched length traces. Options for test points instead of screw terminals or both, DIN rail mounting system or stand-off mounting. Other versions for 50 & 64 ribbon, SCSI 100, SCSI 68.
DINterm64	Break out, plant interface, screw terminal to DIN 64 position [A&C filled] connector adapter. Routed with controlled impedance, matched length traces. DIN rail mounting system or stand-off mounting. Other versions for 50 ribbon, SCSI 68 & 100, VHDCI.
DINribn64	Ribbon cable with strain relief – 64 conductors. Designed to work with DIN option on carriers and DINterm64, also other DIN based interfaces.

[SpaceWire Cable](#)

MDM cable for SpaceWire applications. Intended for support equipment. Multiple versions including standard SpaceWire. Please refer to the webpage for the current options. Ordering options include custom lengths, Type A or Type AL, plating, panel mount, 1:1, cross over, gender bender etc.

[PMC-Extendio-II](#)

Two board set with interconnecting cables. Install into host and onto PMC device to have access to component side while connected to host. PCI and Rear IO signal supported. Minimized footprint to support debugging. 6" & 12" cable options.

[PIM-Carrier-6U](#)

Rear IO support supporting 2 PIMs [PMC Interface Module]. PIMs are used to convert rear IO connections to cable friendly connectors. Rear IO and PIM are interconnected with matched length, controlled impedance routes.

[PIM-Universal-IO](#)

PIM module with 1:1 routing from PN4 to matching SCSI pin number. Extra pins on SCSI are allocated to GND and Fuse [self-healing] protected 5V

[PIM-Parallel-IO](#)

PIM Module with SCSI connector routed to have the same IO definitions as the bezel SCSI on PMC-Parallel-IO. Use the PIM to have the same connections on the rear plate as the chassis bezel. Extra pins are allocated to GND and Fuse [self-healing] protected 5V

[UARTcable8](#)

Use with [PMC-BiSerial-VI-UART](#) to create 8 UART ports with standard differential pinout on DB9 connectors. RX, TX, RTS, CTS supported. Available with DIN rail housing.

[XMC-Connector-Saver](#)

Install between carrier and XMC to limit number of insertion cycles on XMC connectors. Use standard stand-off to mount to either side to protect that side. Mount to carrier or XMC. Full IO connections including Jn4. Alternative use to increase gap between XMC and carrier for test, airflow and other purposes.



PCI & PCIe

Peripheral Component Interconnect [PCI] and PCI Express [PCIe] are the goto standards for hardware designed for PC based applications. Initial Dynamic Engineering designs used the ISA, VESA, and Nubus implementations for PC and Mac applications. Dynamic Engineering has been a supplier of PCI and PCIe based HW since their introduction.

Current PCI & PCIe non-carrier implementations

please refer to the mezzanine module sections for PCI & PCIe solutions.

Name:	Description
PCIe-AlteraCycloneIV	½ length PCIe device with user programmable Cyclone IV FPGA. FLASH and direct upload to FPGA. Second FPGA to manage bus and provide 8 full duplex ports between Cyclone and PCIe bus. 16 DMA engines to support the data streams. 40 differential IO [LVDS and or RS485] 12 TTL, 24 PLL clocks, Reference design and software. SCSI 100 connector at bezel. Updated to new bridge to extend lifespan.
PCIe-Spartan-VI	½ length PCIe device with user programmable Spartan VI 100 FPGA. FLASH and direct upload to User FPGA. Bus FPGA to manage bus and provide 8 full duplex ports between User and Bus FPGAs. 16 DMA engines to support the data streams. 40 differential IO [LVDS and or RS485] 12 TTL, 24 PLL clocks, Reference design and software. SCSI D100 connector at bezel.
PCI-ECL-II	½ length PCI module with 20 ECL TX and 20 ECL RX, SDRAM [32 MB], Spartan 6, NECL, PECL options, local power supplies for NECL [-5V]. Multiple versions available. SCSI 100 connector at bezel.
PCI-SpaceWire-BK	½ length PCI device with 4 SpaceWire ports at the bezel. Standard MDM connectors and pinouts. Industrial temperature. Independent DMA for each of the 8 ports [Rx and Tx separately]. 200 MHz. operation. 4 PLL to select individual TX rates. RX auto bauds. Now with DDR.



[PCle-SpaceWire-BK](#)

½ length PCIe device with 4 SpaceWire ports at the bezel. Standard MDM connectors and pinouts. Industrial temperature. Independent DMA for each of the 8 ports [Rx and Tx separately]. 200 MHz. operation. 4 PLL to select individual TX rates. RX auto bauds. Now with DDR. 32 Mbytes per port.

[PCle-ASCB](#)

Avionics Standard Communications Bus implemented on a PCIe card. Two ports each with primary and redundant capability. Type D and E implemented. Manchester and 8B10B encoding. Software selectable. Dual Port RAM implementation. HW generated CRC, error checking etc.

[PCle-Harpoon](#)

Full length PCIe design with 24 differential IO [LVDS or RS 485], 20 115V detectors [4x 3 phase and 8x single phase], 28 high side switches, 16 low side switches, 20 OptoISO inputs, Industrial Temperature. Use to test the Harpoon or similar equipment. Reference design available for User Design or customizable by Dynamic Engineering.

[PCle-BiSerial-DB37](#)

PCIe based BiSerial Architecture design with DB37 connector at the bezel. 18 differential IO [LVDS or RS485], independent direction and termination controls per IO.

[PCle-HOTLinkx5](#)

½ length PCIe design with 5 HOTLink ports. 4 ports on VHDCI connector and 1 on Coax. All full duplex. Option for PECL or LVDS. Base design is highly programmable with programmable start and end of frame data markers. Synchronization and interframe delay. DMA. Industrial Temperature components.

[PCle-HOTLinkx6](#)

½ length PCIe implementation with 6 HOTLink ports. RJ45 connectors. 4 half duplex ports and 2 full duplex. Software controlled duplexing. Base design is highly programmable with programmable start and end of frame data markers. Synchronization and interframe delay. DMA. Industrial Temperature components.

[PCle4LBPCI](#)

Use PCI device in a PCIe slot. PCIe 4L B PCI is a 4 lane PCIe device with a bridge to convert to PCI. PCI device can be up to 64 data bits with up to 133 for the clock rate. Local power supplies to provide full complement of PCI power rails. Vertical orientation – like an extender card.



[HDEterm100](#)

Break out, plant interface, screw terminal to SCSI 100 connector adapter. 2 cross connected SCSI connectors to allow the signals to flow through the device and available to break out. Routed with controlled impedance, matched length traces. Options for engineering model with termination options. Options for test points instead of screw terminals or both, DIN rail mounting system or stand-off mounting. Other versions for 50 & 64 ribbon, SCSI 68, VHDCI.

PC104p & PCIe104

PCI-104 is the PCI implemented version of PC104p. Most Dynamic Engineering designs in this area are PCI-104 with the ISA connector supplied for stack through purposes. PCIe104 is the PCIe version with a different connector in place of the ISA stack through to support the PCIe lanes in a stacking situation.

Current PCI-104 & PCIe104 implementations

not including carriers for modules covered in other sections.

Name:	Description
PCIe1LPC104	Install PCIe104 module in a PCIe slot. Two module orientations supplied to support test with the module rotated up – both surfaces mostly exposed, and production with the PCIe104 module mounted to the face of the PCIe device. Gen1-3 compatible.
PCI2PC104p	Mount PCI-104 or PC104p module [PCI only] to use within PC environment. Options to order in test orientation or production. Test is rotated to have the module surface exposed for probing [front and rear]. Production has the module mounted to the front of the PCI card to be fully installed in the chassis. Test orientation has header strips with connections to the PCI bus to aide in debugging. Switches are provided to select interrupt routing.
PC104p-SpaceWire-BK	PCI-104 device with 4 SpaceWire ports. Standard MDM connectors and pinouts. Industrial temperature. Independent DMA for each of the 8 ports [Rx and Tx separately]. 200 MHz. operation. 4 PLL to select individual TX rates. RX auto bauds. Now with DDR. 32 Mbytes per port.
PC104p-BiSerial-VI	Special enhanced BiSerial architecture with ADC, DAC, and TTL additions. 16 Differential IO [LVDS / RS-485] 4 DAC 16 bit, 4 ADC 16 bit, 8 TTL. PLL, Industrial Temp components. Option for external FIFOs.
PC104p-BaseBoard	“Kitchen Sink” design with OptoISO inputs and outputs, ARINC 429, UARTs with RS485 IO, 4 A/D and 4 D/A, PCI-104 stack. Rugged design for special enclosure.



[PCIe104-DIFF](#)

1 lane PCIe interface, 18 Differential IO[LVDS / RS-485], independent direction and termination controls, DMA, SDRAM memory, DB37 connector.

[PC104p-COOL](#)

PC104 slice with 2 fan positions. Options for zero slot or higher velocity fans, and orientation, 5V or 12V operation.

[PC104pPWR](#)

Convert external reference to PC104 power rails including +12, -12, 5, 3.3 and in the ISA models -5V. LED indicators, headers to provide power to external devices [chassis level fans etc.], VIO selection for PCI bus support.

[PC104p-RPP](#)

Reverse Power Protection module. A, B inputs steered to +/- inputs for Power supply. 6V-40V operating range. Screw terminal connectors aligned with PC104pPWR devices for easy cabling. Protects against reversed power connections. Option for added FAN.

[PC104p-Chassis](#)

Extrusion based design available in various slot lengths. External chassis with heavy duty aluminum construction including mounting flange. [6061] End caps are mounted with gaskets for water and other contaminant protection. Inner card cage is vibration / shock isolated from outer chassis. Stainless Steel hardware. Most popular lengths run between 7 and 11 positions.

Shelf module is available suitable to mount SSDs etc.

We can modify the base design to support other implementations. We have mounted components to the rear and side walls, made special adaptations with alternate heat sink concepts etc.



VME & VPX

Versa Module European [VME] and the updated PCIe based VPX are part of Dynamic Engineering's product portfolio.

Current VPX & VME implementations

not including carriers for modules covered in other sections.

Name:	Description
VME-6U-COOL	VME design for 6U 4HP with up to 12 zero slot fans installed. Options for direction [forward or reverse]. Option for higher velocity fans with wider bezel. Zero Slot fans have ~5 CFM per fan. 5V or 12V operation.
VPX-6U-COOL	VPX design for 6U 4HP with up to 12 zero slot fans installed. Options for direction [forward or reverse]. Option for higher velocity fans with wider bezel. Zero Slot fans have ~5 CFM per fan. 5V or 12V operation.
VPX-3U-COOL	VPX design for 3U 4HP with up to 6 zero slot fans installed. Options for direction [forward or reverse]. Option for higher velocity fans with wider bezel. Zero Slot fans have ~5 CFM per fan. 5V or 12V operation.
PCIe8LSWVPX3U	Carrier / adapter to mount 3U VPX into PCIe. 8 PCIe lanes routed. Rear VPX IO routed to PCIe bezel [SCSI]. Local power supplies, SCC and NSCC operation for VPX. Switch isolation to allow use in spread spectrum clocked host slot.
PCIe2VPX3UX4	Passive VPX adapter for 3U VPX with 4 PCIe lanes connected. Host must operate in NSCC mode to use this device. Rear VPX IO routed to PCIe bezel [SCSI]. Local power supplies.
VPX-GLIB	Installs into VPX position, controlled via SPI [LVDS] or PCIe interface. 485 and LVDS IO. Some directionally locked and some programmable. SMB interface with FAN and voltage measurement. Remote temperature measurement interface. GPIO [485 and TTL]. Blanking with SW programmable offset. Spartan VI FPGA.
VPX-RCB	SPI or PCIe controlled 3U 4HP VPX design with D/A, Blanking, 1PPS, 10MHz, SMB, SPI IO, LVDS IO, LVTTTL 10 MHz output. FPGA based.



cPCI

Compact PCI is a somewhat ruggedized version of PCI in 3U / 6U mechanical implementation. Dynamic Engineering has carriers for IP, PMC shown in those sections.

Current cPCI 3U and 6U implementations

not including carriers for modules covered in other sections.

Name:	Description
cPCI-6U-COOL	cPCI design for 6U 4HP with up to 12 zero slot fans installed. Options for direction [forward or reverse]. Option for higher velocity fans with wider bezel. Zero Slot fans have ~5 CFM per fan. 5V or 12V operation.
cPCI-ReceiverController	cPCI 3U 4HP design to support digital receiver. This design incorporates most of the house keeping including: 8 A/D, 8 D/A, Temperature measurement, SPI buses to receiver, UART [Rs485], Clock references [LVDS], COS detection on external events with time stamp and FIFO storage. PLL and oscillator clock references. Rear and connector IO intended for inside the chassis connections. This design is shown for reference.
PCI2cPCI-32	PCI mini card to allow cPCI 32 bit PCI to be adapted to a PCI slot. All standard PCI cycles supported [target, master, interrupts etc.]
PCI2cPCI-32-IO	PCI mini card to adapt cPCI 32 bit device to PCI and support rear IO on the cPCI module. Rear IO brought to headers. All standard PCI cycles supported [target, master, interrupts etc.]
PCI2cPCI-64	PCI mini card to adapt cPCI 64 bit device to PCI. All standard PCI cycles supported [target, master, interrupts etc.]
cPCI3U32B1LPCleX4	Mount PCIe module to cPCI position. Converts 32/33 PCI bus to single lane PCIe with reverse bridge. PCIe connector is x4 with 1 lane populated. Local high quality 100 MHz reference. 3U 4HP.



SpaceWire

The base modules for PMC, PCI, PCIe, PCI-104 are shown in those sections. Additional options for those designs and special support tools are shown in this section.

Name:

Description

[DESWBO](#)

Dynamic Engineering SpaceWire Break Out. Standalone chassis with pass through for one SpaceWire link. Test points with statistics / data for both ports suitable for logic analyzer connection [decoded data, counts for FCTs, various errors], LEDs showing operational status, [Green]Data, FCT, EOP and [Red]EEOP, Escape Error, Parity Error, Credit Error, Disconnect Error. Single ended signals for LVDS suitable for scope and logic analyzer. Watch link-up occur and the switch from 10 MHz to your target frequency [or not if something is wrong]. Every SpaceWire team should have one of these devices.

[DESWCB](#)

Dynamic Engineering Spacewire Connector Board. PCB with chassis and up to 28 MDM connector positions to transition from high density wiring to standard MDM cabling. Any number of connectors 1-28 can be installed. PCB can be mounted without chassis. Strain relief designed into PCB.

[Monitor](#)

Add -Monitor to any of the PCI, PCIe, PMC, PC104 SpaceWire modules to modify the build and update the FLASH. The monitor version provides a snoop / sniffer function to capture full rate data on an active link [both sides]. Both ports are captured and buffered to host memory. DMA supported. Linux driver and application included. Captured data is tagged with time-stamp, packet number and packet size.

[SpaceWire Cable](#)

MDM cable for SpaceWire applications. Intended for support equipment. Multiple versions including standard SpaceWire. Please refer to the webpage for the current options. Ordering options include custom lengths, Type A or Type AL, plating, panel mount, 1:1, cross over, gender bender etc.



Chassis

Chassis and chassis level projects.

Name:

Description

[PC104p-Chassis](#)

Extrusion based design available in various slot lengths. External chassis with heavy duty aluminum construction including mounting flange. [6061] End caps are mounted with gaskets for water and other contaminant protection. Inner card cage is vibration / shock isolated from outer chassis. Stainless Steel hardware. Multiple lengths.

Shelf module is available suitable to mount SSDs etc.

We can modify the base design to support other implementations. We have mounted components to the rear and side walls, made special adaptations with alternate heat sink concepts etc.

[PMC-MC-X2-RIO-Chassis:](#)

2 position mini chassis to house PMC-MC-X2-RIO and installed PMC devices. 2 fan mounting positions [fans included], built in fan guard, "feet" and captured fasteners included for mounting. Silk-screen with labels for power switch, PMC IO, Rear IO, Power connector etc.

[PMC-MC-X4-RIO-Chassis:](#)

4 position mini chassis to house PMC-MC-X4-RIO and installed PMC devices. 2 fan mounting positions [fans included], built in fan guard, "feet" and captured fasteners included for mounting. Silk-screen with labels for power switch, PMC IO, Rear IO, Power connector etc.

[DSDA series](#)

Special purpose chassis level designs with DSDA, DSDA-II, DSDA-II-GN, and DSDA-20 as members. Chassis converts between various IO standards. LVDS, RS485, Commutator, RS232, TTL, 50 Ohm. Clock detection. Status LEDs for power, clock, fault. Custom chassis and electronics. Design includes power supplies. Industrial Temperature components. SolidWorks used for mechanical design.

[SCSI Adapter Hub](#)

Chassis implementation to break out signals from SCSI to a combination of DB and coax connectors. Passive design.

